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November 9, 1992

Ms. Donna R. Searcy
Secretary
Federal Communications Commission
1919 M Street, NW, Room 222
Washington, DC 20554

RE: In the Matter of Amendment of the Commission's rules to Establish New Personal Communications Services, GEN Docket No. 90-314, ET Docket No. 92-100

Dear Secretary Searcy,

Enclosed herewith are one (1) original, and five (5) copies of our comments in the above-mentioned proceeding.

Sincerely,

COMSEARCH

H. Mark Gibson
Senior Engineer, PCS Development

HMG:me

enclosure

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92-100

Before The
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter Of	)	GEN Docket No. 90 - 314
	)	ET Docket No. 92-100
Amendment of the Commission's	)	
Rules to Establish New Personal	)	
Communications Services	)	
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OFFICE OF THE SECRETARY

TO: The Commission

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SUMMARY

COMSEARCH acknowledges that the Commission has taken an excellent step in encouraging the development of the Personal Communications Service (PCS). However, we urge the Commission to act quickly on all Emerging Technologies proceedings to ensure that the rulemaking process is not unnecessarily protracted. In addition, we urge the Commission the enact rules that will permit a quick, though not burdensome delivery of service. We emphasize that frequency coordination between the PCS operators and incumbent private microwave operators will be the key in sharing spectrum in the 1850 - 1990 MHz band, which will be one of the essential ingredients in the success of PCS.

We believe that a PCS block allocation of 40 MHz per carrier will facilitate spectrum sharing over a 30 MHz block allocation. This additional 10 MHz of spectrum will offer more spectral room for the PCS operator to use to avoid interfering with incumbent microwave operators yet will impact marginally fewer microwave paths.

We recommend that in situations when it is necessary to relocate microwave paths, the Commission rely upon industry definitions of reliability. Requiring PCS operators to guarantee equal or greater reliability may be unnecessarily burdensome on the PCS operator. In addition, the Commission should allow PCS operators to exhaust all alternatives to allowing offending microwave paths

to remain in the 1850 - 1990 MHz band. Requiring PCS operators to relocate these paths back into the band defeats the goal of making this band available for PCS use.

The Commission should allocate spectrum at 38 GHz for co-equal use by all operators, including PCS. Due to the excellent frequency reuse capabilities, co-equal sharing will permit extremely efficient use of this band. However, frequency coordination is a must.

The Commission should adopt a lottery process that minimizes costs and delays associated with lotteries. We recommend that the Commission adopt a postcard lottery system. However, it is critical that winning applicants be given sufficient time to file their financial and technical details. We suggest a time frame of 30 - 60 days in which to submit all financial and technical requirements.

We recommend that the Commission adopt TIA Bulletin TSB10 as a reference guideline for frequency coordination between PCS and incumbent microwave. This document is under review by an industry working group that includes members from both the PCS and microwave communities.

Finally, we firmly believe that the solution to sharing spectrum between the two dissimilar services such as PCS and microwave rests with frequency coordination. We urge the Commission to be

ever mindful that without proper frequency coordination, PCS cannot become a reality.

INTRODUCTION

COMSEARCH hereby respectfully submits these comments in the above-captioned proceeding (hereinafter referred to as the NPRM).

COMSEARCH joins the scores of companies who eagerly await the outcome of the Commission's actions on the Personal Communications Service, PCS. With this proceeding, we believe the Commission has taken an excellent step to encourage the development of this exciting new service. However, we urge the Commission to act quickly on this and on future proceedings to ensure that the impact of PCS is not diminished by excessive rulemaking delays. In addition, we urge the Commission to enact rules that will promote a timely delivery of service, but that are not onerous for the applicants

Our experience working in both the microwave industry and in the mobile communications industry provides us with the unique ability to examine PCS from many vantage points. Thus, while the Commission's NPRM represents a critical step in the realization of PCS, there are certain areas of the NPRM that we feel merit specific comment. Specifically, those areas are spectrum allocations, negotiations, PCS support spectrum, lotteries, licensing issues, and technical standards.

ALLOCATIONS

We concur with the Commission's statement that "an allocation that provides sufficient spectrum to support at a minimum three service providers per market will be necessary to ensure a wide and rich range of PCS services that meet consumer needs at reasonable prices."[1] However, we firmly believe that each service provider should be allocated 40 MHz instead of 30 MHz. We base this statement on the argument that this additional 10 MHz of spectrum will facilitate sharing spectrum with the incumbent microwave users in the 1850 -1990 MHz band.

The current PCS block allocation as defined in the NPRM[2] provides two 15 MHz blocks per operator. These blocks are each separated by 80 MHz, which is consistent with the transmit/receive (T/R) separation defined by the current microwave channel plans.[3] We agree with the Commission's rationale for separating the PCS channel blocks by 80 MHz; however, we note that not all of the microwave paths in the 1850 - 1990 MHz band are operating with a straight 80 MHz T/R

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[1] NPRM , at para. 34.

[2] NPRM, at para. 38.

[3] There are two channel plans that are used in the 1850 - 1990 MHz band. One plan designates six 10 MHz channel pairs, and the other designates five 5 MHz channel pairs. The 10 MHz channels begin with center frequencies of 1855 for the low channel and 1935 for the high channel. The 5 MHz channels begin with a center frequencies of 1860 MHz for the low channel and 1940 for the high channel. The 5 MHz channels lie between the 10 MHz channels, and are commonly called interstitial channels. A study of our data bases indicates that only about 11% of all receivers in this band use the 5 MHz channels.

separation between channel pairs.[4]

A 30 MHz allocation of two 15 MHz blocks per operator will fall within at least three microwave channel pairs. Therefore, a PCS operator in Block A (1850 - 1865 MHz / 1930 - 1945 MHz) must contend with microwave links using two of the 10 MHz channel pairs and one of the 5 MHz channel pairs. PCS operators in Blocks B (1865 - 1880 MHz / 1945 - 1960 MHz) and C (1880 - 1910 MHz / 1960 - 1975 MHz) will have to contend with microwave links using two 10 MHz channels and two 5 MHz channels.

A 40 MHz allocation of two 20 MHz blocks per operator will still fall within two 10 MHz channel pairs. However, each block will fall within only an additional 5 MHz channel pair. Since there are relatively fewer links using these interstitial channels, there is only a marginal increase in the potential to impact a microwave path. Yet, an allocation of two 20 MHz blocks provides the PCS operator with an additional 5 MHz per block that can be used to avoid impacting microwave links. Therefore, a 40 MHz allocation of two 20 MHz blocks per operator will facilitate spectrum sharing. Based upon this discussion, we urge the Commission to consider a PCS block allocation as follows:

[4] In fact, only about 75% of all the microwave paths in the 1850 - 1990 MHz band use channel pairs that adhere to an 80 MHz T/R separation.

Proposed 40 MHz PCS Block Allocation

Block A: 1850 - 1870 MHz / 1930 - 1950 MHz
Block B: 1870 - 1890 MHz / 1950 - 1970 MHz
Block C: 1890 - 1910 MHz / 1970 - 1990 MHz

NEGOTIATIONS

We believe that perhaps the only way PCS will become a reality in the 1850 - 1990 MHz band is through frequency coordination and negotiated settlements. In the NPRM, the Commission discusses a plan for negotiated settlements between the PCS operators and the incumbent microwave operators.[5] However, there are certain aspects of this plan that may make it difficult for the band to become available for PCS use.

The commission states that the system proposed by the PCS operator for relocation of the incumbent microwave link "must provide equal or better reliability than the existing system." However, there is no discussion of how reliability is to be defined.

Many microwave paths in the 1850 - 1990 MHz band are designed with operating parameters that provide a calculated operating reliability due to propagation of close to 100%, yet many of these paths do not use any reliability improvement techniques.[6]

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[5] NPRM, at para. 47.

[6] Many paths in this band are designed with fade margins well in excess of 40 dB. In addition, many of these paths are shorter than 25 km (15 mi). This will tend give rise to high path availability figures. Therefore, there is generally no need for

Although, when considering the total path reliability including equipment failure, this figure may tend to drop somewhat.

Paths relocated to higher bands will incur greater propagation losses. However, through the use of reliability improvement techniques, these paths may well enjoy equal or better propagation reliability than the path being relocated. Yet, under certain circumstances, especially when the path being relocated operates with a propagation reliability close to 100%, it may be difficult to achieve the exact same propagation reliability, even using reliability improvement techniques. Thus, for want of a few seconds per year of reliability, the microwave path may not be able to be relocated. Therefore we recommend that the Commission allow the PCS industry and the microwave industry to negotiate and determine acceptable reliability standards.

If, after some negotiated period of time, the relocated path does not operate with equal or better reliability, we propose that the PCS operator be allowed several alternatives to just relocating the path back to its original facilities.[7] If the Commission is indeed trying to make the bands below 3 GHz available for mobile use, it does not seem logical to disallow other alternatives if a single one fails.

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reliability improvement techniques such as frequency and antenna diversity.

[7] NPRM, at para 47, item (5).

In the Emerging Technologies NPRM, the Commission mentions other alternatives to microwave including fiber, cable, and satellite communications.[8] While we believe that microwave is still the preferred alternative in most cases[9], we also believe that PCS operators should be allowed to explore all alternatives to relocating microwave paths out of the 1850 - 1990 MHz band. Therefore, we recommend that the Commission permit the PCS operator to explore other relocation alternatives should the initial one not succeed, provided that these alternatives have no significant impact upon the reliability of the existing microwave path.

PCS SUPPORT SPECTRUM

The Commission states that there is "adequate spectrum already allocated for fixed microwave to provide PCS support services."[10] We do not necessarily agree with this. The Commission has identified over 29,000 microwave facilities that are candidates for relocation into higher bands.[11] If these facilities are indeed relocated into higher bands, what is now adequate spectrum may soon become scarce.

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[8] See, Redevelopment of Spectrum to Encourage innovation in the Use of New Telecommunications Technologies, FCC, ET Docket No. 92-9, at paras. 12, 17, 20, and footnote 17.

[9] See, comments of COMSEARCH to ET Docket 92-9, at pages 8 & 9.

[10] NPRM, at para. 55.

[11] See, "Creating New Technology Bands for Emerging Telecommunications Technology," FCC OET/TS91-1 (January, 1992), Table 1.

We believe that spectrum in the 38 GHz band (37.0 - 39.5 GHz) is well-suited for interconnecting network elements of a PCS. The inherently superior frequency reuse capabilities of this band and low implementation cost make it excellent for practically all PCS network interconnections. As the other frequency bands become congested with relocated microwave paths, 38 GHz spectrum may be the only support spectrum available for PCS. We strongly urge the Commission to adopt a channelization scheme for the 38 GHZ band that facilitates PCS interconnection.

We also believe that this band should be shared co-equally among all users. In addition, we believe that frequency coordination is essential. Again, due to the superb frequency reuse capabilities, co-equal sharing will permit extremely efficient use of the band. However, frequency coordination is crucial if the band is to be shared in such a fashion. This will not only ensure that interference is minimized, it will also ensure that band usage is optimized.

LOTTERIES

We generally concur with the Commission's position on lotteries. In addition, we recommend that the Commission adopt a lottery scheme that reduces the costs and delays commonly associated with lotteries. Therefore, to this end, we recommend the use of postcard lotteries. However, it is imperative that the winning applicants be given the proper amount of time to complete the financial and technical portions of their winning applications.

Therefore, we suggest that winning applicants be given 30 - 60 days to submit all financial and technical eligibility requirements. Winning applicants should also be prohibited from transferring their licenses for the entire construction period. In addition, winning applicants should be required to meet certain construction benchmarks.

Requiring financial and technical showings with each application generally places an undue financial burden on applicants. This type of burden may well eliminate the very entrepreneurs that the Commission is trying to encourage. Indeed, a two day window to file supporting financial and technical detail still requires the allocation of substantial up-front resources. We ardently agree that the Commission should attempt to discourage speculation by unqualified applicants. The example cited in the NPRM is that even after many restrictive measures, the Commission still received several thousand applications for licenses in the 220 MHz band.[12] While dealing with such a large quantity of applications may tax the Commission's resources, we believe that it is not in the public interest to discourage a single qualified applicant. The PCS process should be open and available to every entity that is capable of constructing a system and offering competitive service.

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[12] NPRM, at para. 88.

LICENSE MODIFICATIONS

The Commission has proposed that applicants initially not be required to specify base station locations.[13] We do not agree with this. Applicants must specify base station locations and technical operating parameters when filing the technical portion of their applications. Otherwise, how can incumbent microwave operators verify that the PCS operators are not proposing systems that will cause harmful interference?[14] Indeed, without this type of technical information we expect that frequency coordination between PCS operators and incumbent microwave operators will be almost impossible.

2 GHz LICENSED OPERATION, TECHNICAL STANDARDS

The success of sharing spectrum between PCS systems and Operational Fixed Microwave systems in the 1850 - 1990 MHz band will rest upon frequency coordination. In turn, frequency coordination will require proper technical standards for interference criteria and methodology. The technical standards for coordinating paths in the Operational Fixed Microwave Service are explicitly stated in EIA/TIA Bulletin TSB10-E (commonly referred to as Bulletin 10). Comsearch has long used this document as the reference guideline for interference criteria and methodology for most of the fixed microwave services. This

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[13] NPRM, at para. 93.

[14] Consider the cellular filings that require little technical information concerning base stations other than their locations. This has made frequency coordination in this service very difficult.

document will easily be applicable to interference between PCS and microwave.

Indeed, Bulletin 10 is currently being rewritten to accommodate interference criteria for PCS vs. Operational Fixed Microwave in the 1850 - 1990 MHz band. The working group responsible for this is TIA TR14.11. This working group is comprised of members of the private microwave community, and members of the PCS community have been invited to participate in the discussions concerning the PCS-related issues. COMSEARCH has also been an active participant.

Working group TR14.11 is dealing with the very issues raised in the NPRM.[15] Issues such as modelling interference into mobile and portable PCS stations, coordination distances, interference criteria, and propagation models are all being addressed by TR14.11 for both licensed and unlicensed PCS systems. The new version of Bulletin 10 will reflect the decisions reached by the microwave and PCS industry representatives on these issues.

Once consensus is reached within this working group as to appropriate interference criteria and interference analysis procedure, Bulletin 10 will serve as a sufficient guideline for solving coordination issues between Private Operational Fixed Microwave systems and PCS systems in the 1850 - 1990 MHz band.

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[15] NPRM, at paras. 109 - 119.

Therefore, we urge the Commission to recommend that all interference analysis and frequency coordination that must be performed between incumbent microwave and PCS use Bulletin 10 as a guideline for both procedure and criteria.

CONCLUSIONS

The Commission's NPRM is an excellent step towards the realization of the long-awaited Personal Communications Service. Establishing this service in the 1850 -1990 MHz band will necessitate sharing spectrum with the incumbent Operational Fixed Microwave users of this band. COMSEARCH urges the Commission to act quickly to adopt rules that protect both the incumbent microwave operators as well as the new PCS operators.

Allocating sufficient spectrum to facilitate spectrum sharing, providing PCS operators with the proper wherewithal to reasonably negotiate with incumbent microwave operators, providing PCS operators with sufficient support spectrum, and allowing all qualified applicants to participate are all key to the quick delivery of PCS. However, one key to the success of PCS will be the ability to share spectrum in the 1850 - 1990 MHz band. By relying upon the industry to establish technical standards and coordination procedures, the Commission can be assured that spectrum sharing and accordingly, PCS will indeed be successful.

Respectfully Submitted,
COMSEARCH

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